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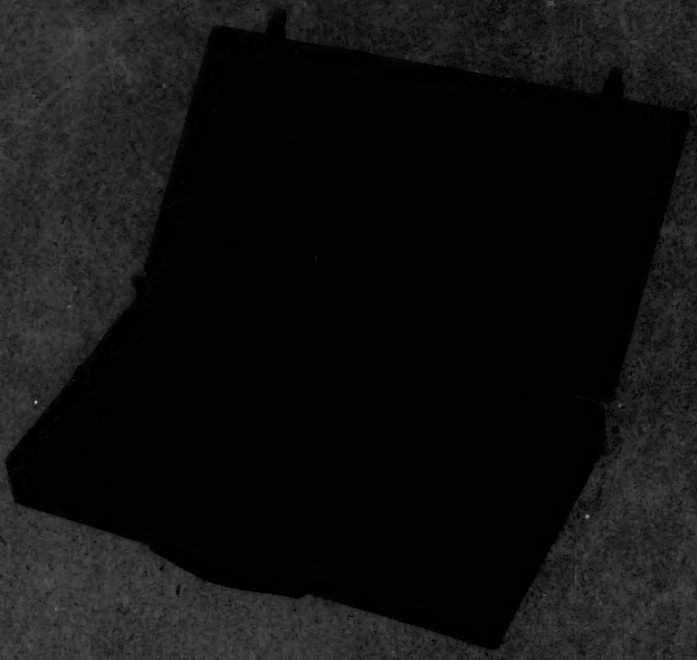


CARRYING CASE FOR EYE INSTRUMENTS, in black leather, lined with silk velvet, fitted with tray for forceps, scissors, etc., rack for knives and needles, with compartment for specula, trephines, probes, etc., with carrying handle, lock and key.

See also p. vi (Inset Advertisement)

THE BRITISH JOURNAL

OF

OPHTHALMOLOGY

DECEMBER, 1942

COMMUNICATIONS

TRAUMATIC ULCER OF THE CORNEA WITH SPECIAL REFERENCE TO COAL MINERS*

BY

COLONEL R. M. DICKSON

DIRECTOR, THE W. H. ROSS FOUNDATION (SCOTLAND)
FOR THE STUDY OF PREVENTION OF BLINDNESS

TRAUMATIC ulcer of the cornea is very common in the eye wards of the Royal Infirmary, Edinburgh, and the Ross Foundation decided that this would be the subject of its first investigation into industrial eye injuries.

A survey of the hospital cases showed that more than half occurred in coal miners, and on that account an enquiry was made into the bacteriology of the eyes of miners under working conditions at the colliery.

The high percentage of miners admitted to hospital is explained by the large number of collieries in Fife and the Lothians, the area of which Edinburgh is the hospital centre.

The miner is the man who " gets " the coal from the coal face. Where a mechanical coal cutting machine is used the miner is known as a stripper, and he uses a pick to break up the coal dislodged by the cutter. Where all the work is done by hand the miner is called a hewer. Brushers and packers are not primarily concerned with coal at all, but use the pick to trim up the rock exposed by the miner. These groups of workers are more liable than others to injury of the cornea from flying fragments of coal or stone and consequently they provide the majority of corneal ulcers amongst miners.

* Received for publication August, 1942.

The conjunctival flora of 658 healthy coal miners was examined, representing four different collieries and all classes of workmen.

It was found that the following pathogenic organisms may be present in significant quantity in all groups of workers: Streptococcus viridans, pneumococcus, diplobacillus of Morax, haemophilic bacilli and B. coli.

It is considered that the conjunctival flora of coal miners is potentially dangerous and that the infection in corneal ulcer is from organisms already present in the conjunctival sac.

By far the commonest organisms found were diphtheroids and staphylococcus albus. Diphtheroids were widely prevalent and varied from 11·6 to 56 per cent. but usually from 30 to 50 per cent. Staphylococcus albus was found in 18 to 60 per cent. of cases but the commonest figure was between 30 and 40 per cent.

Cultures were made from the coal in the pit. It was sterile at the coal face, but heavily contaminated by the time it reached the trucks.

The detailed bacteriological results of this investigation were published in the British Journal of Ophthalmology in 1939.[1]

Ulcer of the Cornea

During the same year (1938) a clinical and bacteriological examination was commenced of every case of ulcer of the cornea admitted to the Eye Department, Royal Infirmary, Edinburgh.

A special index card was used to record the clinical particulars and other information considered necessary, and this report deals with a series of 350 cases, the total number examined up to March 1941.

All ulcers were traumatic in origin. Hypopyon was present in 178, was absent in 172, and 249 cases were examined bacteriologically.

From the cards it was possible to classify the ulcers as slight, moderate or severe.

TABLE I—*Total Cases* 350

OCCUPATION	
Miner	234=66·8 per cent.
Engineer	23
Housewife	13
Labourer	21
Farm worker	10
Quarryman	5
Unemployed	5
Railwayman	4

28 other occupations are represented

The occupational incidence shows a great preponderance of miners.

Two hundred and twenty-one coal miners were affected and 13 shale miners. Of the coal miners, 75 per cent. occurred amongst the men who use the pick.

Bacteriology.—Bacteriological examination showed that diphtheroids, staphylococcus albus and pneumococcus were the only organisms present in any considerable number of cases.

TABLE II—*Bacteriology of 249 Cases*

(In cultures from 60 ulcers there was no growth=24 per cent.)

Organism	Slight	Moderate	Severe	Total	Per cent.
Diphtheroids ..	36	27	4	67	26·9
Staph. albus...	21	16		37	14·8
S. Alb.+Diph.	8	9	2	19	7·6
Pneumococcus	14	14	7	35	14·0
Others ...	9	12		31	12·4
No growth ...	35	25	0	60	24·0

TABLE III

Comparison of Bacteriology of Healthy Eyes and Corneal Ulcers

Organism	Healthy Eyes	Corneal Ulcers
Diphtheroids ...	40 per cent.	26·9 per cent.
Staph. Albus ...	35 per cent.	14·8 per cent.
S. Alb.+Diph. ...	—	7·6 per cent.
Pneumococcus ...	8·1 per cent.	14·0 per cent.

The presence of diphtheroids and staphylococcus albus is probably of no consequence.

Pneumococcus, on the other hand, is the most serious cause of infection and the commonest organism in the severe type of ulcer.

Twelve types of pneumococcus were isolated and it is evident that any type may be the infective agent.

The type of ulcer classified as severe approximated to the description of the typical hypopyon ulcer given in the text books.

The detailed bacteriology, showing the types of pneumococcus met with, is given in Table IV.

TABLE IV—249 *Cases*

Bacteriology—Severity—Lacrimal Sac

Organism	No.	Slight	Moderate	Severe	Sac
No growth	60	35	25	—	3
Diphtheroids... ...	67	36	27	4	4
Staph. albus	36	20	16	—	—
Staph. aureus ...	5	3	2	—	—
S. alb.+diph. ...	19	8	9	2	1
Pneumococcus—					
Type 3	3	—	1	2	1
Group 4... ...	12	7	3	2	1
„ H ...	1	1	—	—	1
Type 6... ...	2	—	2	—	1
„ 7... ...	1	—	1	—	—
„ 10... ...	1	1	—	—	—
„ 11... ...	1	—	1	—	—
„ 13... ...	1	1	—	—	—
„ 20... ...	1	—	1	—	—
„ 23... ...	1	—	1	—	—
„ 28... ...	1	—	—	1	1
„ 29... ...	2	1	—	1	—
Untypeable ...	7	3	3	1	—
Pneu.+Morax ...	1	—	1	—	—
Strep.+Pneu. ...	2	2	—	—	—
Strep. viridans ...	9	5	4	—	—
Strep. non-haem. ...	1	1	—	—	—
S. Alb.+haem. strep.	1	1	—	—	—
Diplobac. Morax ...	6	3	3	—	—
S. alb.+Morax ...	1	1	—	—	—
S. alb.+K. Weeks ...	1	—	1	—	1
Bac. subtilis	1	1	—	—	—
Bac. proteus ...	1	—	1	—	—
Anthracoids	4	3	1	—	—

In comparing the distribution of bacteriological findings in relation to severity of ulcer, it is found that the slight differences occurring might well have arisen by chance,

Lacrimal Sac.—It has generally been accepted that the lacrimal sac is the reservoir of the pneumococcus and that the typical hypopyon ulcer is commonly associated with dacryocystitis. In this series of 178 hypopyon ulcers dacryocystitis was present in only 7·8 per cent., and from a total of 14 cases the pneumococcus was recovered in only five.

The diagnosis of dacryocystitis was based on the regurgitation of fluid on pressure and it was treated by the Toti operation or by excision of the sac.

Including the ulcers with no hypopyon, the sac was infected in 21 cases.

The condition showed a marked increase with age.

TABLE V—*Dacryocystitis*

Age Groups	Cases	Percentage
–25	0	0
25–	6	8·33
45–	8	11·27
65–	7	31·82

Negative Bacteriology Results.—A considerable number of scrapings from the ulcers yielded no growth on blood agar (60 were negative out of 249 cases, or 24 per cent.).

Various suggestions have been made to explain this, *e.g.* the collection of material from the ulcer in most cases was in the hands of the bacteriologist, and it is probable that the undermined margin was not always sufficiently searched. In a number of cases there was an interval of some hours between the scraping of the ulcer and the arrival of the medium at the laboratory. This was not considered important, but an incubator has been provided in order to eliminate this possible cause in a further series of cases.

In dealing with very small ulcers it is probable that inadequate material was obtained in many cases, *i.e.*, the threshold value for quantity of organisms had not been reached.

The percentage of negative cases according to severity of ulcer is: Slight 28·4 per cent., Moderate 24·5 per cent., Severe 0.

Days in Hospital.—The number of days in hospital in relation to age and severity is shown in Table VI.

The occupation of hospital beds is a very important aspect of the incidence of corneal ulcer.

The number of beds in the Eye Department, Royal Infirmary, Edinburgh, is 54, and during 1939-1940 the number of patients admitted for corneal ulcer was 112. In hospitals where the total number of beds for eye patients is inadequate, any preventive measures that will reduce the number of corneal ulcers admitted, and any form of treatment that will reduce the length of stay in hospital means a very welcome reduction in a long waiting list.

TABLE VI

Days in Hospital in Relation to Age and Severity

Age	No.	SEVERITY			DAYS IN HOSPITAL													
		Sl.	Mod.	Sev.	0	5	10	15	20	25	30	35	40	45	50	55	70	80	90
5	1	—	1	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—
10	4	1	1	—	1	2	—	—	—	—	1	—	—	—	—	—	—	—	—
15	16	4	5	—	3	6	3	1	1	—	—	2	—	—	—	—	—	—	—
20	5	3	—	—	3	2	1	1	—	—	—	—	—	—	—	—	—	—	—
25	32	7	5	1	9	11	7	1	4	—	1	1	—	—	—	—	—	—	—
30	30	10	11	—	7	11	6	3	2	—	1	—	2	—	—	1	—	—	—
35	36	20	13	—	2	11	11	6	3	2	1	—	—	—	—	—	—	—	—
40	37	15	12	—	6	12	7	5	4	2	2	1	—	—	1	—	—	—	—
45	40	9	11	1	5	14	7	8	5	—	1	—	—	—	—	1	—	—	1
50	30	11	15	1	4	6	8	5	1	2	3	2	1	1	1	1	—	-	1
55	24	5	9	3	1	7	4	5	—	1	1	2	1	—	2	—	1	—	—
60	22	7	14	4	1	2	3	6	6	2	—	3	—	2	—	—	—	1	1
65	17	2	8	3	—	2	4	2	—	3	2	2	—	1	2	—	—	—	—
70	8	1	3	2	—	—	3	1	1	2	2	—	—	—	—	—	—	—	—
75	2	—	—	2	—	—	—	1	—	—	—	1	—	—	—	—	—	—	—
80	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
85	1	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—
90	1	1	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—

It will be seen from the graph below (Fig. 7) that the average days in hospital mounts rapidly with increasing age.

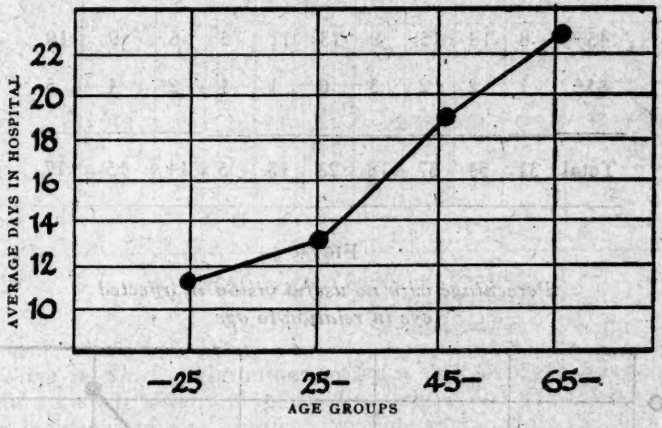
There is a similar relationship with age and severity of the ulcer which is a probable cause of the increased hospital days in older life. Thus, the percentage classified as "severe" in the age groups are these:—

-25= 0
25-= 1·75
45-=10·23
65-=31·82

the average percentage irrespective of age being 9·34.

FIG. 7

Average days in hospital in relation to age groups



In this series of 306 cases the average stay in hospital was 16·29 days.

Visual Results.—A postcard was sent to every patient giving him sufficient notice to report for examination six months after discharge from hospital.

Two hundred and twenty-nine men reported, and the particulars noted were:—

Vision.	Condition of the eye.
Time off work.	Earning capacity.

The visual results are detailed in Table VIII. The three columns at each end of the table are worthy of note; *i.e.*, the good results at one end and the very bad results at the other end.

In 31 cases the vision was not interfered with at all, and a total of 122 cases (53·2 per cent.) had 6/12 vision or better. Where there was little or no interference with vision the corneal scar was either very slight or was situated outside the papillary area.

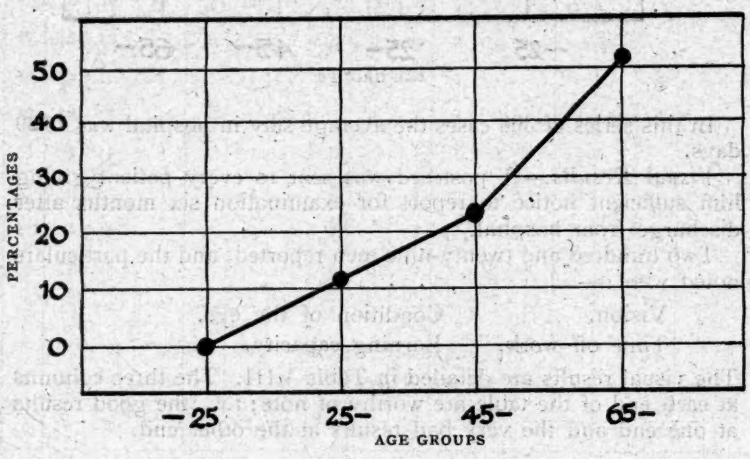
TABLE VIII—229 *Cases*

Visual Result six months after Discharge from Hospital

Age	6/6	6/9	6/12	6/18	6/24	6/36	6/60	Less than 6/60	H.M.	Nil
-25	4	7	2	2	—	—	—	—	—	—
25-	18	27	18	4	10	3	1	6	2	2
45-	8	18	15	9	13	11	3	6	9	10
65-	1	2	2	3	0	1	1	2	4	5
Total	31	54	37	18	23	15	5	14	15	17

FIG. 9

Percentage with no useful vision in affected eye in relation to age



The good results emphasise the fact that many ulcers were extremely small and in every respect were slight. The bad results show 46 with no useful vision in the affected eye (20·5 per cent.), and in 17 of these cases the eye had to be removed.

The graph to illustrate the percentage with no useful vision shows the marked influence of age in this category (Fig. 9).

The time elapsed before admission to hospital was noted in 335 cases, and as would be expected, this shows an increase with the severity of the ulcer.

TABLE X

Time elapsed before admission to hospital in relation to severity.

Total cases 335

	DAYS																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	18	21
Slight ...	14	42	35	34	20	11	5	6	5	—	1	—	—	5	3	—	3
Moderate	8	21	22	23	15	15	6	5	2	2	3	2	1	3	—	1	2
Severe ...	—	—	2	3	4	2	1	1	—	2	1	1	1	2	—	—	—

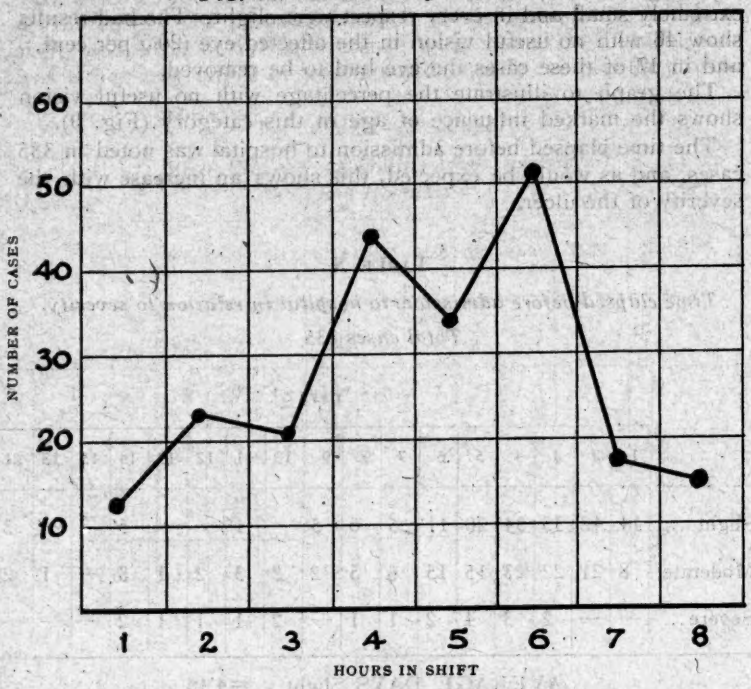
AVERAGE DAYS Slight =4·46
Moderate=5·07
Severe =7·45

Time in Shift.—The miner works a shift of eight hours, and with a view to determining whether fatigue had any influence on the incidence of eye injuries, the time in the shift the accident occurred was noted in 221 cases.

Fig. 11 shows a progressive increase in frequency from the first to the sixth hour, with a decided drop in the last two hours of the shift. The distribution bears no evident relation to fatigue, but speed of working might be related. Statistically the variation observed is not one which is in the least likely to have arisen by chance, and therefore probably represents a real difference of incidence. This factor is being investigated in a further series of cases.

Glasgow Cases.—A similar investigation was commenced in Glasgow Eye Infirmary in October 1938. The same index cards were used so that the Edinburgh and Glasgow cases would as far as possible be comparable.

FIG. 11.—*Time in shift. 221 Cases*



The reports on 87 cases have been studied and the results are summarised as follows:—

TABLE XII

OCCUPATION	
Miner	27=31 per cent.
Engineer	15=17·2 per cent.
Labourer	14
Shipbuilding	9
Quarryman	4
Mason	2
Boilermaker	2
Blacksmith	2
Housewife	4
Schoolboy	3

Five other occupations are represented with one case from each, namely:—

Stonebreaker, cabinetmaker, clerk, gardener, tram conductor.

The occupational incidence differs from the Edinburgh series in having fewer coal miners (31 per cent. compared with 66·8),

a higher percentage of engineers (17·2 compared with 6·5), and 10·3 per cent. of shipbuilders. Of the coal miners, 70 per cent. occurred amongst men who use the pick.

TABLE XIII.—GLASGOW CASES. *Total* 84
Bacteriology—Severity of Ulcer

Organism	No.	Slight	Moderate	Severe
No growth ...	28	10	14	4
Diphtheroids ...	9	5	4	—
Staph. alb. ...	4	2	2	—
Staph. aur.... ...	21	9	10	2
Anthracoids ...	2	—	1	1
Pneumococcus ...	12	4	5	3
Group IV ...	5	—	4	1
Dip.+K. Weeks ...	1	—	1	—
Dip.+Morax ...	1	1	—	—
S. alb.+K. Weeks	1	—	1	—

Where cultures were negative, films from the ulcer edge were examined, and a morphological diagnosis was made in 16 cases, namely:—

Organism	No.	Slight	Moderate	Severe
Morax	7	1	6	—
Pneumococcus ...	9	1	6	2

Including the morphology cases the pneumococcus was found in 30·9 per cent., compared with 14 per cent. in the Edinburgh series.

Infection of the lacrimal sac was noted only once, and staph. aureus was the organism recovered.

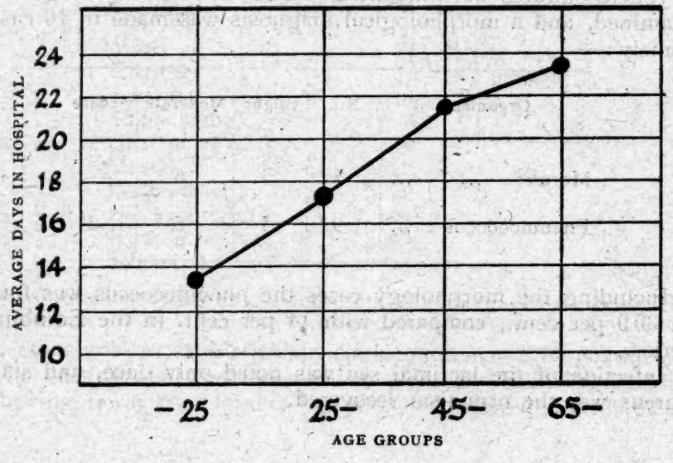
TABLE XIV—GLASGOW CASES

Days in Hospital in Relation to Age and Severity

Age	No.	SEVERITY			DAYS IN HOSPITAL												
		Sl.	Mod.	Sev.	0	5	10	15	20	25	30	35	40	45	50	55	60
5	2	2	—	—	—	1	—	—	1	—	—	—	—	—	—	—	—
10	2	1	1	—	—	—	1	1	—	—	—	—	—	—	—	—	—
15	6	4	2	—	—	3	1	2	—	—	—	—	—	—	—	—	—
20	5	3	2	—	—	1	2	2	—	—	—	—	—	—	—	—	—
25	5	4	—	1	1	1	1	1	1	—	—	—	—	—	—	—	—
30	6	2	3	1	—	1	—	4	—	—	—	1	—	—	—	—	—
35	6	2	4	—	—	1	1	2	1	1	—	—	—	—	—	—	—
40	13	6	4	3	—	5	1	3	1	2	—	—	—	—	1	—	—
45	14	4	7	3	1	1	2	2	1	2	—	1	2	1	1	—	—
50	6	1	5	—	—	1	1	2	—	1	—	1	—	—	—	—	—
55	8	—	8	—	—	3	2	2	—	—	—	1	—	—	—	—	—
60	7	—	5	2	—	1	3	—	—	1	1	1	—	—	—	—	—
65	7	1	5	1	—	2	—	—	2	2	—	—	—	1	—	—	—

GLASGOW CASES—FIG. 15

Average days in hospital in relation to age groups



In this series of 87 cases the average stay in hospital was 19 days.

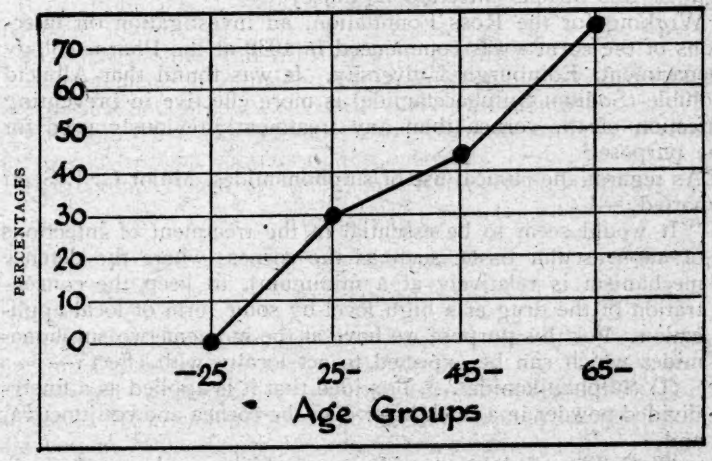
TABLE XVI

Visual result six months after discharge from hospital.—86 *Cases*

Age Groups	6/6	6/9	6/12	6/18	6/24	6/36	6/60	Less than 6/60	H.M.	Nil
–25	2	4	1	2	—	5	—	—	—	—
25–	—	6	6	6	1	—	2	3	5	1
45–	—	2	2	7	3	4	2	5	9	1
65–	—	1	—	—	—	—	1	3	1	1
Totals	2	13	9	15	4	9	5	11	15	3

GLASGOW CASES.—FIG. 17

Percentage with no useful vision in affected eye in relation to age groups



In 27·9 per cent. of the cases vision was 6/12 or better, and 33·7 per cent. had no useful vision in the affected eye.

TABLE XVIII

Time elapsed before admission to hospital in relation to severity.
79 Cases

	DAYS																		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	21
Slight ...	5	5	9	5	2	1	1	1	—	1	—	—	—	—	—	—	—	—	—	—
Moderate	3	4	8	7	6	1	1	1	—	2	—	—	—	3	—	—	1	1	—	2
Severe ...	—	1	1	1	—	1	2	—	—	—	—	—	—	1	1	—	—	—	1	—

AVERAGE DAYS Slight =3·43
Moderate=6·32
Severe =8·55

First Aid Treatment of Eye Injuries in Coal Mines.—Eye drops No. 1 are used in the first aid treatment of eye injuries in accordance with instructions issued by the Factory Department of the Home Office. The drops consist of Cocaine 0·5 per cent. and Hydrarg. Perchlor., in Castor Oil 1 in 3,000.

The incidence of ulcer of the cornea is so common amongst coal miners that these drops appear to be inadequate as a protection against this serious infection of the eye.

Working for the Ross Foundation, an investigation on infections of the cornea was commenced in 1939 at the Pharmacology Department, Edinburgh University. It was found that Albucid Soluble (Sodium Sulphacetamide) is more effective in preventing infection of the cornea than any treatment previously used for the purpose.[2]

As regards the clinical use of sulphonamides, Major G. I. Scott reported :—[3]

"It would seem to be essential in the treatment of infections of an avascular tissue such as the cornea (where the defence mechanism is relatively at a minimum), to keep the concentration of the drug at a high level by some form of local application. For this purpose we have at the moment two sulphonamides which can be expected to act locally with effect :—

(1) Sulphanilamide . . . provided that it is applied as a finely-divided powder in a thick layer over the cornea and conjunctiva, and

(2) Sodium Sulphacetamide . . . which can be used as an ointment, as a powder, or in solutions which are approximately neutral up to concentrations of 10 per cent."

It is I think important that the solutions used should not depart far from neutrality, since quite apart from the local irritant action of solutions with a high pH, the lysozyme in the tears is, as Ridley has emphasised, most effective at normal pH.

There is no experimental justification for the use of sulphapyridine, sulphathiazole, or sulphadiazine. It is probable that the sodium salts of these sulphonamides would penetrate readily, but the high pH of the solutions (greater than 10·0) would make them too irritant for repeated application.

Local treatment alone.—The main value of purely local treatment, with preparations such as the above is, I think, in the prevention of infections of the eye:—

1. I would suggest that a 10 per cent. solution of sodium sulphacetamide should be tried as a substitute for Credé's method in the prophylactic treatment of the eyes of the newly born child.

2. The second great use for a suitable sulphonamide, as a local application, would seem to be in the first aid treatment of industrial injuries."

As Albucid Soluble is harmless to the eye, it was recognised that it could be confidently recommended as the best first aid treatment for use in the ambulance rooms at collieries.

With the sanction of the Mines Department, and the collaboration of H.M. Divisional Inspector of Mines in Edinburgh, 30 collieries in Scotland were selected for a practical trial of the new treatment, which was commenced in December 1941.

Eye drops No. 1 were replaced by 10 per cent. solution of Albucid Soluble.

Standard bottles and brushes were provided.

Arrangements were made for the eye drops to be renewed and the bottles and brushes sterilised every two months.

Cardboard eye shields were also issued to ambulance rooms for use in serious wounds of the eyeball.

Instructions issued to Ambulance Room Attendants:—

EYE INJURIES.

FIRST AID TREATMENT.

EYE DROPS.

Eye drops should be applied to the eye by pulling the lower lid forward and using the camel-hair brush.

To remove a foreign body from the cornea the brush only should be used. If this fails, a pad and bandage should be applied and the patient sent at once for expert treatment.

The following particulars should be entered in the first aid book each time the eye drops are used:—

Name, age, and address of patient.

Was a foreign body removed with the brush.
Was further treatment required by a doctor or in hospital.
How long was the patient off work.

Every two months a fresh bottle of eye drops will be sent from the Pharmacology Department, University of Edinburgh. The bottle in use should then be posted to the Department, using the same packing and the printed address label supplied.

Cardboard Eye Shield

The shield should be applied over the dressing ONLY in the case of a serious wound of the eyeball. It is kept in place by tying the tapes behind the head. The shield is to prevent further injury before the patient reaches hospital.

It was the original intention of the Ross Foundation to continue the experimental stage of the new first aid treatment for a year. It became evident, however, from the reports of several collieries that Albucid Soluble was so satisfactory in its results that any delay after six months trial would not be justifiable. All the collieries were therefore visited in June 1942 by the Director of the Foundation.

Report after Six Months' Trial.—Managers and Ambulance Room Attendants were unanimous in their praise of the new treatment, and the results of six months' trial are summarised as follows:—

Total number of men employed in the collieries -	23,500
Number of injuries treated with albucid soluble -	646
Foreign bodies removed from the eye with the brush	360

Of all cases treated at the ambulance room, 15 men lost 74 days off work, an average of five days. Several of these did not report for treatment on the day of injury.

In 34 cases an unsuccessful attempt was made with the brush to remove a foreign body embedded in the cornea. These men were all treated by the doctor after having the eye drops applied. One man lost work for 7 days and another for 9 days. No working time was lost by the remaining 32 men.

Only 7 cases have been admitted to hospital with corneal ulcer during the six months under review, and three of these men reported to the doctor without receiving the eye drops. The length of stay in hospital varied from 19 days to 3½ months.

The best indication of the efficacy of first aid treatment is the time off work on account of eye injury, and the figures show the remarkable record of 96·3 per cent. of injuries treated with no loss of working time whatever.

Men frequently reported for drops for smoke-grit or dust in

the eyes. These cases were not recorded and the eyes gave no further trouble.

Occasionally the drops have been used for burns with caustic potash and sulphuric acid, and the results have been very good.

It should be emphasised that early treatment is essential and that the danger of ulceration increases with the lapse of time. Notices have been posted at some collieries recommending immediate report for treatment after injury, and the response of the men has been excellent. It was almost invariably stated that the men find the drops very soothing.

As a means of saving much individual suffering and as a method of conserving man power, it has been recommended to the Mines Department that this new scheme of first aid treatment be adopted at all collieries throughout the country.

Hospital Treatment.—In the Eye Department, Royal Infirmary, Edinburgh, albucid soluble is being used for the treatment of corneal ulcer. Further clinical work is necessary before any standard treatment can be recommended.

Two forms of application of the drug are in use at present, namely :—

1. 30 per cent. albucid soluble eye drops applied six times daily.
2. Albucid powder applied locally to the ulcer.

Both drops and powder are reported to give satisfactory results, and no irritation of the eye has been caused by either method of administration.

Summary

This report deals with a series of 437 traumatic ulcers of the cornea; 350 cases in the Royal Infirmary, Edinburgh, and 87 cases in the Glasgow Eye Infirmary.

59·7 per cent. occurred in coal miners.

The bacteriology is shown in detail and includes the conjunctival flora of healthy miners. The pneumococcus was recovered from the ulcer less frequently than was anticipated, but it was the commonest organism in the severe type of hypopyon ulcer. Dacryocystitis associated with hypopyon ulcer was present in 7·8 per cent. of the Edinburgh cases, and was noted only once in the Glasgow series.

The average stay in hospital was 16·2 days in Edinburgh, and 19 days in Glasgow.

In 23·8 per cent. of the total cases there was no useful vision left in the affected eye six months after discharge from hospital.

Albucid Soluble eye drops in the first aid treatment of eye injuries in coal mines have been most successful in preventing infection and corneal ulcer.

A practical test was carried out for six months at thirty collieries in Scotland, and 96·3 per cent. of eye injuries were treated with no loss of working time.

In the hospital treatment of the developed hypopyon ulcer the method of application of Albucid Soluble is still in the experimental stage, but the results appear to be satisfactory.

Acknowledgments.—We have pleasure in making the following acknowledgments. The bacteriology of the Edinburgh cases was done by Dr. A. J. Rhodes, and of the Glasgow cases by Dr. W. B. Kyles. We are indebted to Professor T. J. Mackie of Edinburgh University for his interest and guidance in this part of the work.

Dr. J. M. Robson and Major G. I. Scott conducted the research on Albucid Soluble at the Pharmacology Department, Edinburgh University.

We have to thank Dr. H. M. Traquair and Dr. E. H. Cameron of the Royal Infirmary, Edinburgh, and Dr. S. S. Meighan and Dr. John Marshall of Glasgow Eye Infirmary for their courtesy in making available all clinical material in their eye wards.

Our thanks are also due to Dr. P. L. McKinlay of the Department of Health for Scotland for his valuable help in the statistical work.

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SYMPATHETIC OPHTHALMITIS

BY

T. HARRISON BUTLER

SYMPATHETIC ophthalmitis is a rare disease, and some surgeons have never seen a case. Professor Franschetti told me some twelve years ago that he had never seen one in Professor Vogt's Clinic at Zürich. During thirty years' work at the Coventry Hospital I had two cases both of which might have been prevented. One was a man whose eye was perforated by a piece of coal. I failed to remove this from the interior of the eye, and eventually advised that the eye should be excised. My advice was disregarded and sympathetic ophthalmitis developed. The injured eye was removed

and a course of mercurial inunction carried out for a long time. Eventually at the end of nine months the eye made a complete recovery. This was some 28 years ago, before the age of treatment with massive doses of salicylates and later with N.A.B.

The second case was a woman who refused enucleation after an unsuccessful cataract extraction. Sympathetic inflammation set in, and when the patient was seen it had been active for a fortnight. Nothing could be done to save the eye. The clinic at Coventry is a busy one, a large number of serious accidents are treated, and about 200 major operations performed every year. Under these conditions the occurrence of only two examples in 30 years proves the rarity of the disease.

During 20 years at the Warneford Hospital, Leamington, I saw only one case of the sympathetic type. This was a boy of 10 or so who had a small perforation in the limbal region. Some time after the accident the anterior chamber on each side was found to be full of particles shewing well-marked convection currents. These rapidly increased in number till in each anterior chamber a ring rather like a vortex ring of smoke was present. In the beam of the slit-lamp this could be seen easily with an ordinary loupe magnifying six times. I have never before or since seen such an astonishing mass of particles in the anterior chamber. This boy made a rapid and complete recovery with injections of N.A.B. There was never any " K.P." and the presence of particles was the sole reason for diagnosing the case as one of sympathetic ophthalmitis.

During 18 years at the Birmingham Eye Hospital I saw several cases. In a large Eye Hospital the cases do not get the individual expert supervision from the Honorary Surgeon that they obtain in the Eye Department of a General Hospital. The old cases and the operation cases are seen by the House Surgeons who have neither knowledge nor the experience necessary to diagnose sympathetic ophthalmitis in its earliest stages. As sympathetic ophthalmitis has never been indexed I cannot trace my cases, but I can say from memory that every example that was recognised early and treated with N.A.B. made a good recovery. In all about two or three were lost, but most of these occurred before the value of N.A.B. both as a prophylactic and for treatment had been discovered.

During the past ten years I have not had any sympathetic ophthalmitis although during this period I have been most conservative in my treatment of eyes that have suffered from accidents or have given anxiety after operation.

In spite of all the research that has been carried out, and the theories that have been formed, I think that I shall not be seriously criticised when I say that we know literally nothing about the

ultimate cause of the disease. We know that sympathetic ophthalmitis follows the puncture of the exciting eye, and that apart from inflammations associated with the presence of sarcomata in the exciting eye, it occurs under no other conditions. In my opinion the exception can be discounted. I do not believe that the serious plastic iridocyclitis that can be caused by a sarcoma in the other eye is the same disease as sympathetic ophthalmitis. It differs in one important particular. When the eye containing the sarcoma is removed, the sympathising eye can make a complete recovery. I believe that sympathetic ophthalmitis does not exist apart from a punctured globe. Before we can make a diagnosis we must satisfy ourselves that an irido-cyclitis is present in the punctured globe, and that there is no other extraneous cause for the inflammation in the sympathising eye. We know that sympathetic ophthalmitis rarely begins within a fortnight of the accident, and that the remaining eye can be considered safe a month after the removal of the injured eye. I believe that those cases which have been reported as occurring long periods after the removal of a punctured eye are examples of a chronic smouldering sympathetic ophthalmitis that have never been properly examined with the slit-lamp, and have never been recognised as examples of sympathetic ophthalmitis. The case of Minda H., which I shall describe to you, is a case of this nature. I have seen three cases in which sympathetic ophthalmitis began exactly 14 days after excision of the damaged globe, and I wonder whether the removal of the eye may have produced conditions favourable for the development of sympathetic ophthalmitis. I am here purposely vague in my phraseology.

Sympathetic ophthalmitis has a pathology of its own which was described by Fuchs, but it is so like a tuberculous process that Professor Meller in his Doyne Memorial Lecture for 1934 told his audience that he had proved to his own satisfaction that sympathetic ophthalmitis was a tuberculous state. Probably few will agree with him.

From what has been said it is obvious that the diagnosis of sympathetic ophthalmitis is not an easy one, at any rate in the majority of cases. It is a good rule to realise that rare diseases really are rare, and that the case under consideration is in all probability not suffering from sympathetic ophthalmitis. The fact that an operation has been performed upon an eye does not confer upon it or its fellow any immunity from ordinary iridocyclitis which is often bilateral. The very fact that an operation has been performed may precipitate an attack of iridocyclitis although we may have no idea as to how or why. I have occasionally seen binocular iritis after an operation, and more rarely bilateral iridocyclitis. These two conditions may be pathologically allied, but

clinically they seem to me to be quite different. The correct diagnosis depends upon a careful examination of both eyes and of the general condition of the patient. As Schirmer has pointed out, we are not warranted in diagnosing sympathetic ophthalmitis till we have satisfied ourselves that there is no other cause for the inflammation.

The slit-lamp is a most important instrument in the differential diagnosis. The presence of particles in the anterior chamber and the determination of the rapidity of their movements is most important in the case of the exciting eye, and of vital import in the sympathising eye. Not less valuable is the presence of particles in the retro-lental space, and of exudative foci in the vitreous. Fine "K.P." of the pellucid type may be detected with the slit-lamp when it is difficult to see with the loupe alone. The presence of pigmented particles does not worry me. They generally come from the surface of the iris, and in the aged have little significance. The detection of any of these anomalies in the sympathising eye is serious and makes the diagnosis of sympathetic ophthalmitis probable. For this reason it is essential to make frequent and careful examination with the slit-lamp of any eye that is under suspicion. If we wait till we obtain the "classical signs" of sympathetic ophthalmitis, the copious mutton fat "K.P.", the plastic exudates, and synechiae, we have probably lost our chance of saving the eye.

Prophylaxis is the best treatment. If an eye has been wounded so severely that it has lost its value as an organ of sight it ought to be removed. Short of this the greatest experience is called for to decide whether an injured eye should be saved or not. In all cases our bias ought to be towards saving the organ. As we have seen, sympathetic ophthalmitis is a rare disease and the chance that any given accident will cause it is really minimal. Only when an injured eye begins to show signs of iridocyclitis will the question of excision be considered, and the result of treatment will have much to do with our procedure. Naturally if the eye contains a foreign body an attempt will be made to remove it. I am convinced that a full course of N.A.B. is valuable not only as direct treatment of the iridocyclitis, but as a prophylaxis against sympathetic ophthalmitis. So much so that for the past five years I have given up injections of activated sera and boiled milk.

Can we get any help from a blood count? After having scores of blood counts made in many cases of severe injury during a period of 25 years, I have no hesitation in saying that they have no value whatsoever. I have found a normal differential blood count in practically every case of sympathetic ophthalmitis that I have seen. The one exception was the case that I lost at Coventry. A normal blood count gives me no comfort and an abnormal one does not worry me. If in spite of treatment the iridocyclitis does not

improve, if the eye gets tender and soft, then I should remove the eye. I agree with Mr. J. Jameson Evans, that it is more dangerous to temporise in the case of a child than of an adult. If sympathetic ophthalmitis has developed then I should be still more hesitant about removing the exciting eye, and should do so only were I quite certain that it had little or no prospect of retaining any useful vision. In the majority of cases the sympathetic inflammation is more severe and devastating than that in the exciting eye, and when once it has got a hold the prospects of the wounded eye are better than those of the sympathising. This was not always my opinion, but I was completely converted by the arguments put forward by Malcolm Hepburn and S. H. Browning at a discussion on sympathetic ophthalmitis at the Oxford Congress, in 1926.

The best treatment of sympathetic ophthalmitis is, as I have said, prophylaxis. When the disease has actually developed there would seem to be but one line of treatment, to push N.A.B. to the limit of safety, and use atropine locally. It is doubtful whether salicyclic acid has any real value, and I have not used it for a long time.

The results of treatment are very gratifying. In a paper that I read to the Oxford Congress in 1928 (*Trans. Ophthal. Soc. U.K.*, Vol. XLVIII, page 346), I summarised the notes of ten cases of sympathetic ophthalmitis. Two of them went completely blind. The other eight made a complete recovery. All depends upon early diagnosis, and immediate treatment with N.A.B., I regard this drug as specific for sympathetic ophthalmitis, and much credit is due to Browning for his enthusiastic recommendation of this line of treatment. Occasionally one sees a report of a case of sympathetic ophthalmitis which has commenced several months after the original accident, or at an unusually long time after the removal of the offending eye. I am inclined to think that such cases, if they indeed be real examples of it, are aggravations of a slight attack of sympathetic ophthalmitis which has been overlooked. Such a case has been under my charge for the past 13 years. She came to the Birmingham Eye Hospital in 1925, at the age of 8 years. There was at the limbus of the left cornea a small cystic iris prolapse. The mother thought that the end of her brother's whip had caught the eye. A mistaken attempt was made to free the iris, and a fortnight later " K.P." was detected in the injured eye, and a day later the right anterior chamber was full of floating cells, with films and fibres of fibrin. The left eye was removed and the anterior chamber became normal, all the particles and debris disappearing. But from that time to now there have always been a few spots of small pellucid " K.P." They are not the same spots. They absorb and others take their place. Apart from this the eye is normal with full vision, and no evidence of

any inflammation. But the eye is not normal; it is in my opinion suffering from chronic sympathetic ophthalmitis, and it is possible that there might be a flare up with serious consequances. The excised eye was examined by Mr. Treacher Collins, and he reported that it showed the typical Fuchs choroiditis, and that it was in his opinion a dangerous eye. It is possible that had I retained the eye it would have made a complete recovery, and that the girl would have two useful eyes instead of one. A case almost exactly the same seen two years later at Leamington, was treated with N.A.B. The injured eye was not removed, and both made a complete recovery as far as I know. This case was last examined in June, 1942. A little fine pellucid "K.P." was still present, but the eye was otherwise normal.

A CHOROIDAL MELANOMA TREATED BY SURGICAL DIATHERMY

BY

L. H. SAVIN *and* G. C. PRITCHARD

LONDON

THE following case raises interesting questions for discussion:—

On December 3, 1941, L.U., an R.A.F. corporal, aged 37 years, attended medical outpatients at King's College Hospital, complaining of severe headaches, which frequently incapacitated him. He was seen by Dr. Brigden, who found no general or local cause for the pain. His Wassermann reaction was negative. He was referred to the eye department. Here he was carefully refracted and pronounced emmetropic. Vision was 6/5 in each eye. Fields were normal and there were no abnormal scotomata. His eyes were normal except for a small choroidal melanoma of the left eye (Fig. 1). The melanoma extended above to a branch of the central vein; its lower pole just touched a branch of the artery. Provisionally the tumour was diagnosed "choroidal mole"; but the patient was kept under observation. Three weeks later the lower pole of the tumour was found to extend to the other side of this branch of the artery—the growth was extending slightly, and appeared to be one of the rare cases of a malignant melanoma developing from a benign pre-existing melanoma (Grinker, 1940).

Choice of treatment was difficult. Our first impulse to enucleate the eye was restrained by the unexplained headaches, which we thought might indicate secondaries, and the good vision in the eye (6/5). As the growth was small we decided to destroy it by surgical diathermy. The position of the growth was carefully localised ophthalmoscopically.

On January 1, 1942, an operation was performed under retrobulbar and subconjunctival novocaine anaesthesia. The inferior rectus was infiltrated with novocaine and for convenience the facial nerve was blocked.

It was found easy to expose the sclera over the affected area without any resection of the inferior rectus. The ordinary 2·5 mm.

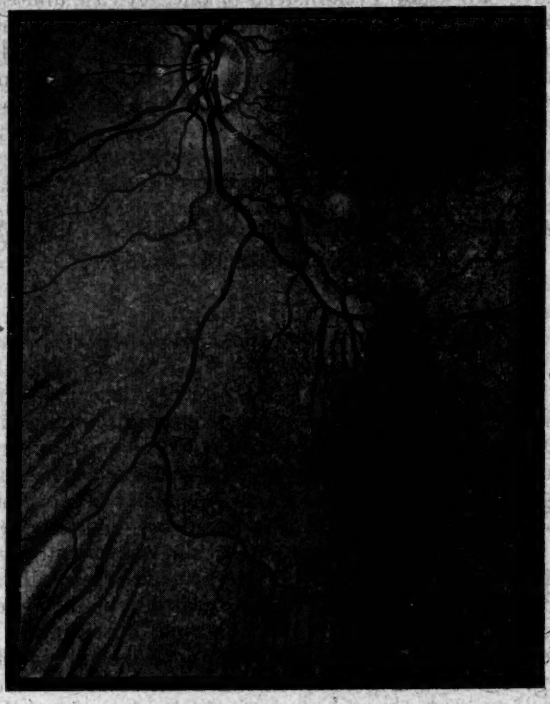

FIG. 1.

The melanoma when first seen.

flat electrode described by Weve (1940) was employed on the Keeler diathermy unit using a 120 ma. current for three seconds. The first application was about 1 disc-diameter too far forward; but the second application was right on the melanoma.

Ophthalmoscopy showed a white circular area of burn exactly over the tumour. The retinal vessels were in a state of spasm, which could be seen to pass slowly along them during the period of observation.

By January 30, 1942, the eye had settled down. There was no loss of central vision; but a peripheral sector defect could be demonstrated on the perimeter (2/330, white object). The formerly dead white diathermy marks in the fundus were now becoming surrounded by pigment (Fig. 2).

On April 14, 1942, this pigmentation had considerably increased in both areas, but in the tumour area there appeared, in the white

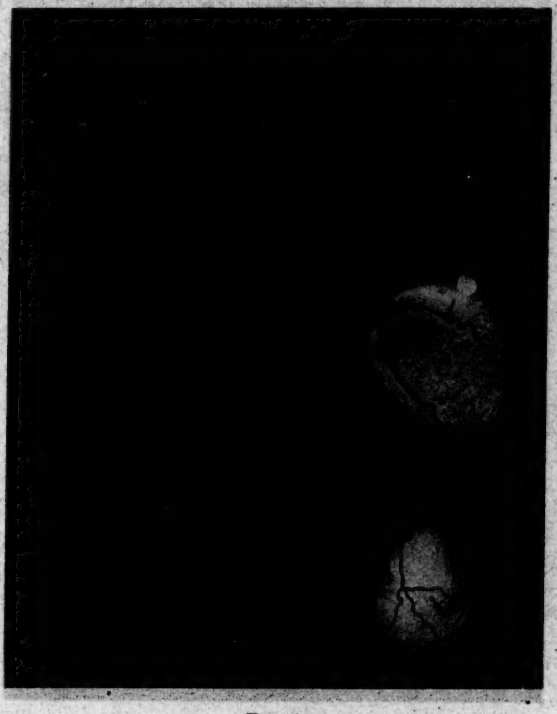

FIG. 2.

Twenty-eight days after operation.

ring, a pigment patch which was less black and was the shape and size of the original tumour. This appearance raised the question of recurrence, but Mr. A. D. Griffith thought it was due to the pigment of the dead tumour becoming apparent as the overlying coagulated retina became transparent. There were a few haemorrhages from damaged retinal vessels. The retina in the area around the patches was raised into folds as if by contraction of the scars (Fig. 3).

On July 14, 1942, pigmentation was more increased and some retinal haemorrhages were still visible (Fig. 4). Since then there has been little change in the fundus appearances. The patient is in good health except for the headaches, which still cause him trouble periodically. The haemorrhages are absorbing.

1. The patient cannot be considered out of danger while the unexplained headaches persist, in spite of a history of similar, though apparently worse, attacks in his father.

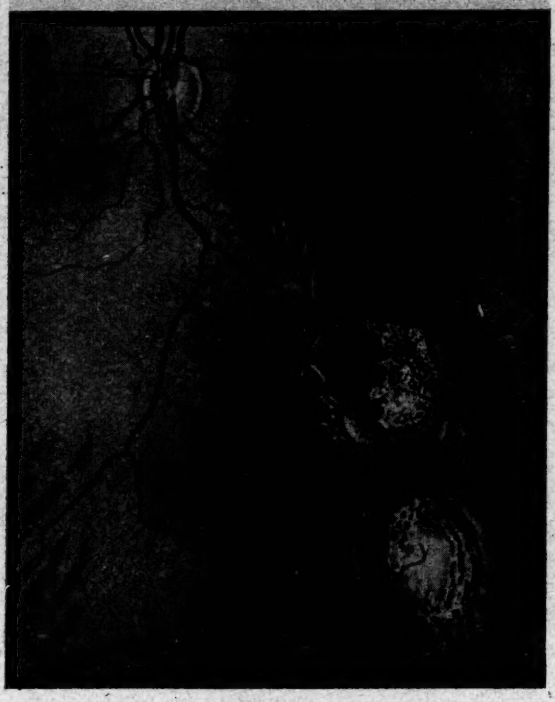

FIG. 3.

Appearance on April 14, 1942.

2. The diathermy seems to have caused adequate local destruction of the growth and to be a useful method in selected cases of choroidal tumour. (See also cases reported by Weve, 1939).

3. In this case it is hard to suppose that much additional safety would have been attained by an enucleation, especially in view of the high recurrence rate reported after enucleation for melanoma (Pahwa, 1941).

FIG. 4.

Appearance on July 14, 1942.

4. The " sighting shot " with the diathermy in this case was accidentally made through faulty localisation. A scar for comparison purposes on a normal area of retina proved, however, to be extremely valuable. We shall make such a scar deliberately in future cases, if by some fluke we strike the tumour at the first application.

We wish to thank Messrs. A. D. Griffith, F. Ridley, W. T. C. Lumley, and T. H. Whittington, for much helpful advice and assistance.

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TEST TYPE

BY

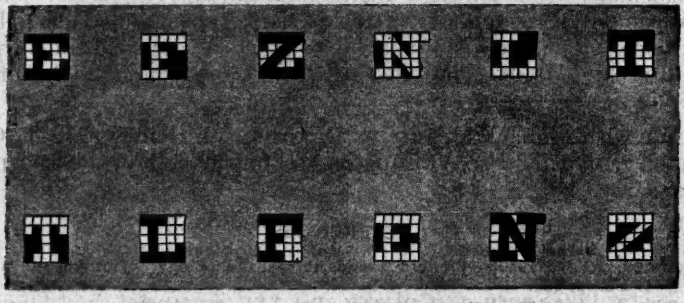
J. P. SPENCER WALKER

HOVE

IT has always appeared to me that there must be something wrong with the expression 6/5 or 6/4 in making a note of a patient's vision. It cannot be right that, when a patient is placed 6 metres from the test type, that he should be able to read what he ought to read at 4 metres or even at five. It is obvious that the test type is at fault, and not that the patient has abnormally good sight. I have made various trials, and I have found that many test types do not conform to Snellen's, and even when they apparently do so (I use the word apparently for a reason which will appear later) a patient with full visual power will read more than 6/6, or will read it too easily.

First let us consider what is the true Snellen's type. A letter or pattern is built up with 25 black and white squares, each of which subtends an angle of one minute at 6 metres. Does any of the so-called Snellen's type in fact do so? No. As the letters are printed in black on white paper, we have about 13 black squares on what is equivalent to several hundreds of white. It is for this reason that a patient can read the type too easily.

I have tried to make a true Snellen's type, and my method is as follows. I have taken 25 black and white squares, arranged in the form of letters, and placed them on a card of a neutral tint of grey. We thus have 12 or 13 white squares and a corresponding number of black and no more, for the background is neither black



NOTE.—As reproduced here the Test Type is reduced in size and the grey background is not of the true tint. To reproduce the type satisfactorily two "blocks" would have to be made, which is impracticable in War-time.

nor white. With this arrangement I have found that only those, who truly have 6/6 vision can read the letters, and I maintain that this is the solution of the problem. Two further points should be noted. The first is that it is immaterial whether the letters are formed with the white or the black squares, in fact it appears in practice that it is better to have some letters in white and some in black. The second is that some letters are not suitable to be included in the type. As far as possible the letters should be made up with twelve or thirteen squares; it is obvious that we cannot have half squares, for then the angle subtended would not be one minute. The following letters are the most suitable, and I suggest that these only are used, E F Z N L and T. This does not seem very many from which to choose, but if they are used more than once in a line, and the letters are sometimes white and sometimes black, it will be found that they are quite sufficient. In practice I do not think that it is necessary to print more than the 6/6 and the 6/9 lines in this special way. The type for 6/60, 6/36, 6/24, 6/18, and 6/12 can be printed in the usual way on a white background, so long as they are formed in the proper Snellen manner. In most types only one letter is given for 6/60, and two for 6/36, but in my opinion there should never be less than three letters of any one size.

My next objection to the existing type is that, when a patient cannot see 6/60, he is brought nearer to the type, and so we get records such as 3/60, 5/60, and the like. This is most inaccurate. It is convenient to do this in many cases, and in a great number of such cases it is sufficient for our needs. There are, however, many occasions when greater accuracy is wanted. For these cases I have made type as follows: 6/90, 6/120, 6/150, and 6/180. The results obtained are most interesting, and prove the inaccuracy of the method where the patient is brought nearer to the type. The tables of comparisons, I think, explain my point without further words of mine.

In examining the tables it will be noticed that there is perhaps more discrepancy amongst the cases with 3/60 vision than amongst the others. This may prove to be helpful in assessing the vision of those patients who are on the borderline of "blindness within the meaning of the act," and placing them in their proper category. The following cases are striking, J.N. right eye 3/60 6/150, left eye 3/60 6/90, P.G. right eye 3/60 6/180, left eye 3/60 6/90, and D. right eye 1/60 6/180, left eye 1/60 6/150.

The explanation of the inaccuracy of the usual practice is that, when the patient is brought nearer to the test type, the image does not fall entirely on the macula, but partly outside it. This shows why one patient, who reads say 3/60, sees less than another who also sees 3/60. One patient may have poor macular vision, and the

TABLE I

	Vision		Remarks
D. E.	5/60	6/90	Congenital Cataract. Aphakia (R. E.)
H.	5/60	6/90	Myope
O. N.	5/60	6/90	Congenital cataract
H. R.	5/60	6/120	Albino
K. H.	5/60	6/120	Choroiditis
B. P.	5/60	6/90	Myope
C.	4/60	6/90	Myope
D. E.	4/60	6/150	Congenital cataract. (L. E.)
D.	4/60	6/90	
A. E.	4/60	6/90	R. E. Optic atrophy
	4/60	6/90	L. E. Optic atrophy
R. J. N.	4/60	6/90	Old ophthalmia neonatorum. Optical iridectomy
P. B.	4/60	6/120	Nystagmus
J. deW.	3/60	6/90	Congenital cataract. Aphakia
H. G.	3/60	6/120	Albino
J. McC.	3/60	6/120	Retinitis
J. N.	3/60	6/150	R. E. Myope with corneal nebulae
	3/60	6/90	L.E. Myope with corneal nebulae
P. G.	3/60	6/180	R.E. Congenital cataract both eyes
	3/60	6/90	L.E.
E. Q.	3/60	6/150	Corneal leucoma
H.	3/60	6/150	Hypermetrope, nystagmus
McK.	3/60	6/90	
E. J.	3/60	6/150	Albino myope
H. G.	2/60	6/120	Albino
K. G.	2/60	6/150	Old ophthalmia neonatorum. Central leucoma
J. McC.	2/60	6/120	Retinitis. L.E.
A. P.	2/60	6/150	Macular degeneration
R. J.	1/60	6/180	Myope −20·0 DSph. Vision really 6/180 partly
D.	1/60	6/180	R.E.
	1/60	6/150	L.E.
G. M.	1/60	less than 6/180	

other may not, but the only way of differentiating between them is by using the proper type at 6 metres. Another factor which no doubt plays an important part is accommodation.

I have found that to print the letters for 6/90 etcetera, requires a card 25 by 20 inches, in order to get three letters for the various types except 6/180, when only two letters for this type can be placed on a card of this size. I have no doubt that the letters could be printed on a roller blind of white material, which would be more convenient, but anyhow the type is needed only in certain cases.

TABLE II

1	6/90	5/60	11	6/120	3/60
2	6/90	5/60	12	6/120	3/60
3	6/90	5/60	11	6/120	2/60
	6/90	5/60	12	6/120	2 60
5	6/90	4/60	13	6/150	3/60
6	6/90	4/60	14	6/150	3/60
7	6/90	4/60	15	6/150	3/60
8	6/90	4/60	17	6/150	2/60
10	6/90	3/60	18	6/150	2/60
13	6/90	3/60	20	6/150	1/60
16	6/90	3/60	19	6/180	2/60
4	6/120	5/60	20	6'180	1/60
9	6/120	4/60	22	6/180	1/60

As regards the occasions when this type for more than 6/60 will be needed each oculist must decide for himself, but I suggest that it should always be used in schools for the partially-sighted, whether myopes or not, also in such cases as those which require an accurate report of their vision. I hope that possibly this suggestion may be of some use in helping to solve the difficult problem of deciding if a patient is "blind." At present the definition of blindness is vague, and perhaps the addition of an accurate record of vision together with the usual "so blind as to be unable to perform any work for which eysight is essential" may be of assistance.

ANNOTATION

Quis Custodiet Ipsos Custodes

When a patient begins to cross-examine one about some part of his ophthalmic anatomy, before one has mentioned it, it is a sure sign that he has been told something by somebody else and wishes to have a second opinion without disclosing the fact that he has already had a previous one. If one realises at the time what he is at, it is best to tell the patient to put all his cards on the table. But many patients love being secretive; they do not necessarily wittingly mislead one but they like to keep facts back. The writer was taken in in this way some years ago and the story may be worth telling. A young man was sent to see us by a doctor who had been our contemporary as a student. He complained of his right eye which had become misty about 4 days before. The eye was only

slightly injected and there was a quite obvious crop of keratic precipitates in the lower part of the cornea. The vision was roughly 6/18 and the tension not raised, there were no synechiae present. After having dilated the pupil it was difficult to get a clear view of the fundus; the disc appeared normal but the lower branch of the central vein was markedly dilated. The field showed a large quadrantic defect which ran in to the blind spot. We judged that there was a patch of choroiditis somewhere and finding that pus was exuding from a sinus in connexion with one of the teeth in his upper jaw we suggested this as a possible cause, advised him to see his dentist without delay and promised to communicate with our doctor friend. Then it was that he began to cross-examine us about his optic nerve. We did not realize the reason until two days later when another doctor rang us up and explained that he had previously sent the patient to his own oculist who had diagnosed optic neuritis and had urged institutional treatment. The doctor seemed quite hurt: "so-and-so says he's got optic neuritis, you say he hasn't, which am I to believe?" This was a ticklish question but after a little talk it was settled that the patient should be returned to the first oculist and that we should meet him there in consultation. Of course the man was late for his appointment and while waiting my colleague told me that he had not found the precipitates and I confessed to not having seen a patch of choroiditis, though I had suspected it. Both precipitates and a choroidal patch were quite obvious when he at length arrived. When, some time after, we met our colleague we asked what had happened to this man. "Oh," said he, "he went off to see a third man, one of our clinical assistants at the hospital, and he said he could find nothing the matter with the eyes at all."

When the seniors make an error how shall we blame the clinical assistants?

ABSTRACTS

MEDICAL OPHTHALMOLOGY

(1) **Good, P. (Oak Park, Illinois).—Choked discs in lead encephalopathy.** *Amer. Jl. Ophthal.*, Vol. XXIV, p. 794, 1941.

(1) **Good** states that lead poisoning usually occurs in children 1 to 3 years of age and the chief source is paint on cribs and toys. In some cases nipple shields have been blamed. A blood concentration of lead below 0·03 mg. per 100 c.c. is normal and over 0·06

mg. per 100 c.c. is abnormal. A clinical feature of diagnostic value in children is the X-ray evidence of dense bands in the growth line of long bones, where lead is deposited. Encephalitis and associated papilloedema are other clinical signs in children. In adults basophilic stippling of the red cells and lead lines in the gums are more frequent findings.

The cerebro-spinal fluid pressure may be as high as 700 mm. of water and in infants the cranial sutures may be separated.

The author quotes a case of a child, aged 2 years, with bilateral papilloedema who underwent sub-occipital craniotomy. The cerebro-spinal fluid contained lead and 0·1 mg. was found in 703 c.c. of urine. Spectographic examination of the blood showed 0·2 mg. of lead per 100 c.c. Bands of increased density were seen at the ends of the diaphyses on X-ray examination.

The other case described by the author had a medulloblastoma of the cerebellum in addition to lead poisoning.

H. B. STALLARD.

(2) **Watkins, C., Wagener, H. P., and Brown, R. W. (Rochester, Minnesota).—Cerebral symptoms accompanied by choked optic discs in types of blood dyscrasia.** *Amer. Jl. Ophthal.*, Vol. XXIV, p. 1374, 1941.

(2) **Watkins, Wagener** and **Brown** write that haemorrhage into the nervous system in the course of thrombocytopenic purpura has long been recognised. The haemorrhages may be large, small, single or multiple and may occur sub-dural, in the meninges, intra-ventricular, intra-cerebral and into the spinal cord and thus may cause mental confusion, transient coma, paralyses, aphasia, hemianopia, diminished hearing and convulsions.

Ocular complications consist of retinal haemorrhage, bilateral papilloedema and bilateral external rectus paralysis. The authors describe three cases of thrombocytopenic purpura in which bilateral papilloedema was present without any demonstrable evidence of an intracranial pathological lesion and in none could it be proved that intra-meningeal and intra-cerebral bleeding had occurred.

The fourth case reported by these authors was that of a man, aged 50, with recurrent gastric haemorrhage from a large ulcer. He had bilateral papilloedema and post-mortem examination revealed no intracranial lesion. They suggest that the mechanism of papilloedema was the same in these four cases, a local reaction of the optic nerve tissues to anoxaemia from loss of blood. They quote some experimental work on animals to support this view and comment that papilloedema is also seen in scurvy, haemophilia and haemolytic icterus with severe secondary anaemia.

H. B. STALLARD.

(3) **Covitz, E. E. (Boston).—Exophthalmos.** *Amer. Jl. Ophthal.*, Vol. XXIV, p. 1423, 1941.

(3) **Covitz** comments that exophthalmos is uncommon as the first and earliest sign of thyroid disease. In one of his cases this preceded thyrotoxicosis by 1 year and 8 months, in another by 6 months, and in another by 8 months. Exophthalmos occurs in 75 per cent. of cases of thyrotoxicosis and is more prominent in the young.

The author discusses the theories about the aetiology of exophthalmos. He comments that a toxic thyroid may spontaneously enter a phase of remission.

H. B. STALLARD.

(4) **Klemme, R. M. (Saint Louis).—Oculogyric crises.** *Amer. Jl. Ophthal.*, Vol. XXIV, p. 1000, 1941.

(4) **Klemme** comments that oculogyric crises are a late result of epidemic encephalitis. He quotes Hall's figures of the incidence of 15 to 20 per cent. of 384 post encephalitic Parkinsonians. This phenomenon may also occur in neurosyphilis, brain tumour, multiple sclerosis, hysterical attacks, arterio-sclerotic Parkinsonism and some psychic disorders. Gliosis of the corpus striatum, the substantia nigra and their connecting tracts has been suggested as the site of the lesion.

Among therapeutic agents which have been tried are stramonium, benzedrine sulphate, hyoscine and atropine sulphate. The author describes his operation of pre-motor cortical excision at the junction of the first and second frontal convolutions, adjacent to the anterior edge of the motor cortex and passing to the depth of the sulcus. He has operated on 130 patients and states that oculogyric spasms ceased after operation. He found that typical oculogyric attacks could be produced by cortical faradic stimulation at the site of operation described above.

H. B. STALLARD.

(5) **Bab, W. (San Francisco, California).—Allergy of the eye.** *Amer. Jl. Ophthal.*, Vol. XXIV, p. 759, 1941.

(5) **Bab** discusses the nature of allergy, the clinical and experimental facts associated with such a disorder and the imperfections in our present knowledge about its aetiology. He states that skin tests, at best, can only furnish evidence corroborative of the history. He comments that most hypersensitive persons are nervous, have a labile and unstable character and a psychopathic constitution. Excitement is known to precipitate some allergic manifestations.

The author writes that it is possible that contact allergy plays a major role in superficial eye conditions such as allergy of the cornea,

conjunctiva and eyelids. The main feature in ocular allergy is the preponderance of a subjective hypersensitiveness; the complaints of the patient do not correspond to the objective findings.

In discussing treatment the author considers that the results of desensitization are often unsatisfactory. He recommends calcium in small or medium doses by mouth and is impressed by the value of a salt-free diet in some cases. He believes that epinephrine in eye-drops and injected subcutaneously seldom alleviates symptoms, and if so is only of transient value, the condition later becoming worse.

H. B. STALLARD.

(6) **Charlin, C. (Santiago, Chile).—The toxic syndrome of ocular tuberculosis.** *Amer. Jl. Ophthal.*, Vol. XXIV, p. 1392, 1941.

(6) **Charlin** stresses the importance of a careful investigation into the general condition of a patient, suffering from an ocular lesion suspected of being tuberculous, before tuberculin injections are begun. He states that any departure from the normal concerning appetite, sleep, energy, weight and temperature is a signal for caution. Disturbances of these functions, and in women associated dysmenorrhoea, constitute what the author terms a toxic syndrome. He quotes four cases where the symptoms and signs of this syndrome were improved by tuberculin injections. The dose is not recorded and the tuberculosis aetiology is conjectural in some of the cases reported.

H. B. STALLARD.

(7) **Thygeson, P., and Stone, W. (New York).—The treatment of inclusion conjunctivitis with sulphathiazole ointment.** *Jl. Amer. Med. Assoc.*, Vol. CXIX, V, p. 407.

(7) The value of sulphanilamide by oral administration in cases of inclusion conjunctivitis in infants and adults has been claimed by **Thygeson** in previous reports. It was found that infants responded in the first days of treatment and were usually cured within a week. In adults the papillary type of the disease responded equally rapidly, but in cases with predominant follicular hypertrophy several weeks were required for the conjunctiva to return completely to normal. The inclusion bodies characteristic of the disease could not be found after the first few days of treatment. There were no recurrences in cases in which the treatment was continued six days or longer. Local therapy with the same drug was ineffective.

Since the virus of inclusion conjunctivitis is known to attack epithelium only and its superficial layers most concentratedly (thereby differing in toto from trachoma), oral therapy would appear to have no advantage over local therapy other than that concerned

with the maintainance of a constant therapeutic concentration of the drug.

The local use of 5 per cent. sulphathiazole sodium ointment six times daily was effective in causing rapid healing in 11 out of 15 cases of inclusion conjunctivitis in infants, children and adults.

A. F. MACCALLAN.

(8) **Gifford, Sanford R. (Chicago).—Position of muscles after operation for strabismus.** *Arch. of Ophthal.*, March, 1942.

(8) After quoting the opinions of various authorities on this subject, **Gifford** proceeds to give his experiences in 24 cases where re-operation was carried out by himself in order to straighten the eyes after a previously unsuccessful operation. Details of each case are given and the general findings are as follows.

In divergence following tenotomy of the internal rectus, which was often 50 or more degrees in amount, the attachment of the internal rectus to the sclera might be found as far back as 17mm. from the limbus, and successful results attended its reattachment, combined with recession of the external rectus. In cases where recession of the internal rectus had produced an over-correction, the defect was probably due to extra adhesions occurring between the muscle and sclera behind the line to which it had been recessed. The latter was usually at or near the location of the scleral sutures. After resection and tucking operations which had produced an insufficient effect, adhesions were found between the muscle and the globe far behind the original insertion, possibly due to necrosis of the fibres or to clot formation among them. In a case of resection and advancement, the adhesion was along the line of the original insertion. Two cases of unsuccessful myotomy of the inferior oblique were found to owe their failure to the occurrence of reattachment of the muscle. The author therefore advises the removal of at least 4 mm. of muscle fibres to produce a permanent effect. In investigating some cases of diplopia following detachment operations, it was found that diathermy may cause attachment of muscles to the sclera whether or not they have been resected.

F. A. W-N.

(9) **Verhoeff, F. H. (Boston).—Retinitis pigmentosa with widespread gliosis—so-called choroideremia.** *Arch. of Ophthal.*, April, 1942.

(9) In this paper, **Verhoeff** makes the interesting suggestion that many cases in which the diagnosis "choroideremia" is made are really cases of retinitis pigmentosa in which the choroid is intact but hidden from view by a deep seated retinal opacity, resulting

from gliosis. In support of this, he mentions a case histologically examined by him in 1931. In it there were places in the fundus where there was much pigment, with deeper seated gliosis behind it which hid the choroidal vessels. He also mentions cases of choroideremia examined clinically, in which careful ophthalmoscopic examination disclosed evidence of retinitis pigmentosa and in which the history was also suggestive of the same disease.

F. A. W-N.

(10) **Cordes, Frederick C. and Hogan, Michael J. (San Francisco).—Dysostosis multiplex (Hurler's disease: lipochondrodysplasia: gargoylism).** *Arch. of Ophthal.*, April, 1942.

(10) This is a rare disease of congenital origin, and **Cordes** and **Hogan** record 5 cases. It is characterised by chondrodystrophic skeletal changes and deposition of a lipoid-like substance in many of the body tissues. The typical picture comprises dwarfism, deformity of the limbs, enlargement of liver and spleen, with a large head, widely separated orbits, a short neck, kyphosis and a protuberant belly. In many cases, a corneal haze is present. The disease was first described by Hunter in 1917 at the Royal Society of Medicine, but the corneal complications were not noted until described by Hurler in 1919. Although familial, the disease is not usually inherited. In the 50 cases reported up to date, no cause has been found for it.

The first signs usually appear towards the end of the first year of life when enlargement of the head and kyphosis are seen. Some degree of umbilical hernia develops in all cases and there are characteristic deformities of the hands and feet. So far as ocular findings are concerned, a distinctive haziness of the cornea occurs in over 75 per cent. of cases, in 16 it appeared before the age of 2 years and in two instances, was present at birth. It is always bilateral and originates in the deeper layers of the stroma in the pupillary area, spreading gradually to involve the whole cornea except the epithelium and the endothelium. With the slit-lamp the opacity can be resolved into uniformly distributed tiny grey or yellowish grey dots. In a number of cases the corneae are larger than normal, simulating buphthalmos. Histologically, lipoid granules have been found in the cornea.

Commenting on their cases, the authors state that Dysostosis Multiplex is to be classed among the lipoidoses, but differs from the other forms (Tay-Sachs', Neimann-Pick's, Hand-Schuller-Christian's and Gaucher's diseases) in having additional bony changes not apparently due to lipoidosis.

F. A. W-N.

BOOK NOTICES

Health for the People. Proposals for a Positive and Active Health Policy for the Nation. Pp. 80. Liberal Publication Department, 8, Gayfere Street, London, S.W.1. Price, 1/-.

This is the first of a series of Liberal Reports designed for the general public. It was prepared by a committee of five, two of whom have large experience of medical and hospital work. It is arranged in two sections, in the first of which are discussed existing arrangements and in the second, proposals for the reform of the health services. It seems to us a weighty addition to the discussion now going on about the future of medicine in this country. The first part is a useful summary of the rather chaotic arrangements now existing, and many of the suggested proposals seem to us to be excellent. With regard to the ophthalmic services we reprint the paragraph.

"Although a number of excellent eye hospitals exist, particularly in London and certain provincial centres, adequate care of the eyes is not easily obtainable free by the insured population, nor at reasonable fees by the remainder. There is no supervision of the sale of spectacles, and any unqualified person may describe himself as an optician, and set up a shop. Glasses are frequently bought haphazard at one of the cheaper chain stores, without any kind of test or prescription, although irreparable harm may be done to the sight by wearing incorrect spectacles. The aim should be an adequate service by *ophthalmic medical practitioners*, since a qualified sight-testing optician is not competent to conduct a medical examination which is always desirable; but even the cost of testing by a qualified optician, and the price of correct glasses, is too great for the lower paid workers and their dependents. Some, but not all, Approved Societies provide assistance in this respect. The National Ophthalmic Treatment Board scheme represents a valuable if inadequate effort to meet this vital national need."

The ophthalmic branch of the profession will certainly agree with most of this.

The committee has examined the proposal that a complete state medical service should be set up, in which all medical practitioners should be included on a salaried basis, and all voluntary hospitals and public institutions merged, and have rejected it.

The Eye Manifestations of Internal Disease. By I. S. TASSMAN, M.D. Royal 8vo, pp. 542, with 201 illustrations, of which 19 are colour plates. London: Henry Kimpton. 1942. Price, 48/-.

The author is Associate Professor of Ophthalmology at Philadelphia and Surgeon to Wills Hospital. He has arranged his book

roughly in two parts, the first of which is devoted to descriptions of the normal eye structure, a general description of the causes of eye manifestations and to structural abnormalities. This forms a good introduction especially for beginners or physicians not actively engaged in ophthalmological practice. The second part presents the eye manifestations of different diseases. Here the chapters are entitled as follows: infections and infectious diseases; tuberculosis; virus infections; fungus infections; parasites; focal infections; drug and chemical intoxications; diseases of the cardio-vascular system; diseases of the blood; disorders of menstruation and pregnancy; diseases of the endocrine glands and metabolism; avitaminosis and nutritional diseases; diseases of the nervous system; intracranial tumours; diseases of the skin; and finally diseases of the bones of the skull. A short bibliography is appended at the end of each chapter and there is a very good index. The information given is comprehensive and we consider this part of the book excellent. Each disease is briefly but adequately described, together with cause and other phenomena, and then the various eye diseases which may be found in that disease are set out seriatim. There are two very useful summaries in tabular form of renal disease with and without retinitis and of the various syndromes met with in intracranial tumour. The remarks on treatment are sound and, as the sulphonamides are included, up to date. We were interested to see a reference to retinal haemorrhages in hyperemesis gravidarum recorded in 1932 by Stander in "Surgery, Gynecology and Obstetrics"; but the occasional presence of retinal detachment in eclampsia does not seem to be mentioned.

The illustrations have been well chosen and reproduced. They include a very good colour plate of lipaemia retinalis.

There is so much that is very good in this book that it seems a pity that some odd blunders have been missed in passing it through the press. The chief occurs on p. 68, where it is stated that "the fovea contains only rods, no cones." Vision of 6/60 does not so far as we know equal 20/20. The third nerve supplying the extra-ocular muscles with the exception of the external rectus leaves something to be desired in the way of the superior oblique. This is a pure slip as the correct information will be found in the first chapter. There are a few minor blemishes which more careful proof reading would have eliminated. Steno's duct should be Stenson's; Packard should be Pickard. We don't like the word "hyphemia," but it may be correct spelling in America. In one of the bibliographies we noted the honoured name of "Nettleship, E. Roy:" a mistake that we think would have tickled that testy master.

We note these blemishes, not in a carping spirit, but in the hope that the author will correct them in the second edition to which we expect his book to run.

The Vertebrate Eye and its Adaptive Radiation. By GORDON LYNN WALLS, Research Associate in Ophthalmology, Wayne University College of Medicine. Pp. 785, 483 illustrations. Cranbrook Institute of Science, Bloomfield Hills, Michigan, U.S.A. Price, $ 6·50.

Those who are interested in the anatomy and physiology of the vertebrate eye, as, *inter alios*, all ophthalmologists should be, have hitherto had to rely for information chiefly upon articles in foreign treatises, such as those by Victor Franz in the *Handbuch d. vergleich. Anatomie d. Wirbeltiere* (1934), by August Pütter in the *Graefe-Saemisch Handbuch. d. ges. Augenheilk.* (1912), by Rochon-Duvigneaud in the *Traité d'Ophtalmologie* (1939), and by Ovio in his *Anatomie et Physiologie de l'Oeil dans la Série animale* (1927).

Excellent articles on retinal photoreceptors are given in *Graefe-Saemisch* and in the *Handbuch. d. normalen u. path. Physiologie*, edited by Bethe and others (1929-31); and on the chemistry and physics of photoreception by Lythgoe, Hecht, and Arlington Krause. The colour vision of the lower vertebrates is treated at length by Hess in Wintersteiner's *Handbuch. d. vergleich. Physiologie*, and his researches on fishes have been severely criticised in papers by Frisch. Beautifully illustrated articles on the ophthalmoscopic appearances in mammals by Lindsay Johnson (1901) on in birds by Casey Wood (1917) have been published.

None of these sources is by any means exhaustive, and further data must be laboriously obtained by searching through innumerable papers in anatomical, physiological, zoological, and other literature. Dr. Walls has conferred a great boon, not only by his own original reseaches, but also by gathering together all the most pertinent facts in one comprehensive treatise.

The scope of the book will be sufficiently indicated by the table of contents:—

Part I. Basic.—1. Light and its Perception. 2. A Typical Vertebrate Eye: the Human—structures and their functions; optics and accommodation, the ocular adnexa. 3. The Vertebrate Retina—histology and physiology, types of visual cells; the duplicity theory. 4. The Visual Process—scotopic vision; photopic vision. 5. The Genesis of the Vertebrate Eye—embryological; evolutionary. 6. Elements of Vertebrate Phylogeny.

Part II. Ecologic. 7. Adaptations to Arhythmic Activity—the twenty-four hour habit and the eye; retinal photomechanical changes; pupil mobility; duplicity and transmutation. 8. Adaptations to Diurnal Activity—diurnality and the eye; the diurnal retina; areae centrales and foveae; intra-ocular colour filters. 9. Adaptations to Nocturnal Activity—nocturnality and the eye; the nocturnal retina; the slit pupil; the tapetum lucidum. 10. Adaptations to Space and Motion—accommodation and its substitutes;

visual angles and fields; eye movements and the fovea; depth and solidity perception; movement perception. 11. Adaptations to Media and Substrates—aquatic vision; aerial vision; air-and-water vision; the spectacle. 12. Adaptations to Photic Quality—colour vision in animals; dermal colour changes; colouration of the eye.

Part III. Synoptic.—13. Cyclostomes—lampreys; hags. 14. Higher Fishes—elasmobranchs; chondrosteans; holosteans and teleosts; cladistians and dipnoans. 15. Amphibians—anurans; urodeles; caecilians. 16. Reptiles—chelonians; crocodilians; *Sphenodon*; squamates. 17. Birds. 18. Mammals—monotremes and marsupials; placentals.

Each chapter of part III is enriched by lists of cross-references to statements in parts I and II.

The author's own researches, some of which have been published in this Journal, have been chiefly devoted to the morphology and physiology of the neuroepithelia of the retinae of various animals, and his opinions with regard to them must be received with great respect. Nevertheless it is difficult to accept his somewhat dogmatic statement—quite contrary to generally received opinion—that the cones are older and more primitive than the rods. The shape of the foveal cones in the human retina is enough to show that the morphological characteristics are no true guide to the physiological functions of the two types of epithelium. It is perhaps unfortunate that his terms "photocyte" and "scotocyte" have not been adopted, though this is questionable in view of the highly speculative attribution of their functions in different animals. It might be thought that the presence of rhodopsin in the outer limbs, which can be proved by histological methods, would be a safe criterion of the scotopic type of cell, but Walls states that many "rods" do not contain rhodopsin (*e.g. Sphenodon*); and furthermore it is almost certain that there are other photochemical substances in the retina which have different characteristics and staining reactions.

As is usual in zoological literature—in spite of the dogmatic or tacit denial of the transmission of acquired characteristics—the explanations of function are essentially teleological, as is indeed indicated by the subtitle of the book. Dr. Walls is a firm adherent to the Duplicity Theory of vision, and for him, as his suggested nomenclature indicates, cones are definitely photopic and rods scotopic. Most people agree that this is true of human vision; but when one considers the extraordinary adaptations to different environments by different animals—adaptations so extraordinary and discontinuous in various species as seriously to impugn phylogenetic arguments as to the functions of various structures—one feels some doubt as to the universal validity of the Duplicity Theory. This argument is strongly borne out by the very controversial problem of colour vision in animals, as to which there seems to be

little foundation for dogmatism except in the cases of man and of those animals which possess coloured oil globules in their "cones." Moreover even in man, granted that the Duplicity Theory holds good as a generalisation, there is evidence of complex modifications of visual impulses, such as facilitation, summation and above all inhibition, some of which are certainly intra-retinal, which must profoundly affect our conceptions of visual processes both in man and in lower animals.

One would not wish these criticisms to militate against the value of the book. Even if the explanations are often highly speculative Dr. Walls has gathered together a wealth of scientifically verified facts, and his deductions may well act as stimuli for further research.

Specially noteworthy are the author's arguments as to the respective rôles of visual acuity and visual sensitivity, the former mediated by cones and the latter by rods. The effects of colour screens (corneal, lental, and retinal pigments; oil globules), single tracks and retinal summation, lens shapes and positions, size of eye, pupil shapes and reactions, tapeta, and so on upon these functions are treated in masterly fashion.

Many of the facts are summarised in a series of very useful tables:—photomechanical changes, areae centrales and foveae, intra-ocular colour filters, contracted pupil shapes, tapeta lucida, mechanism of accommodation. There is also a plate showing a tentative scheme of the evolution of the visual cells in vertebrates.

The reviewer has discovered few positive errors, but there is little evidence that the malignant tumour "glioma retinae" (so-called) is derived from the neuroglia (p. 49). The statement that "it is certainly the ciliary epithelium covering the ciliary folds and processes" which is the immediate source of the intra-ocular fluid (p. 371) is misleading in the light of recent research, and is indeed rather surprising as emanating from a comparative physiologist. In writing about perception of movement the author says that "the tops of the wheels are travelling faster than the car itself"—an old catch; what is the "top" of a wheel in motion?

The book is beautifully printed and lavishly illustrated, and there is an excellent bibliography.

An Introduction to Clinical Perimetry. By H. M. TRAQUAIR, M.D., F.R.C.S., Ed. Pp. 15-332. Illustrations 245, coloured plates 3 London: Henry Kimpton. 1942. Price 30/-.

Traquair's Perimetry has become a standard work of reference both to ophthalmologists and neurologists, and it is not surprising, therefore, that a new edition should be called for even during war time. The author states in his preface to this, the fourth edition, that an alteration in format has been found necessary, but although

a "utility" standard may have been aimed at, the result has been to produce a volume which illustrates the true meaning of this word and not its modern connotation, when applied say, to a suit of clothes. Apart from the use of slightly thinner and smaller pages, there is no apparent difference between this edition and its predecessors, to which it forms a worthy successor.

It is a great tribute to the careful planning and writing of this book that although the first edition appeared fifteen years ago, the alterations which have had to be made to it since have been of a minor character. Practically everything which was said in 1927 remains true now. The main changes in the present edition are the incorporation of some new figures and references, and amplification of some of the passages. There are also some tables which were not included in the second edition. These provide a resumé of information given in the letterpress, and that on page 273, showing the relationships between visual field changes and intracranial lesions will be found useful, particularly by those who have to lecture to students.

We would take this opportunity of congratulating Dr. Traquair not only on the appearance of the fourth edition of this book, but also on the industry and prescience he has shown in having conceived and written what has become a classical treatise on a subject which he has made peculiarly his own.

CORRESPONDENCE

THE THEORY OF FOCAL SEPSIS

To the Editors of THE BRITISH JOURNAL OF OPHTHALMOLOGY.

DEAR SIRS,—From time to time essays appear in which various ocular diseases are attributed to focal sepsis of some kind: With the exception of a comparatively few cases of tubercular iritis I have failed to note any scientific explanation of causation. Of course a septic focus should be eliminated and sometimes subsequently the ocular condition either disappears or is ameliorated. But when the facts are studied carefully the negatives are numerous.

Thousands of tonsils, not necessarily septic, have been removed and careful examination eliminated any advantage in most cases except with regard to diphtheria. Teeth have been removed wholesale and with what advantage? All that one asks is that proof should

be furnished of the causation of ocular diseases by this method. Bacon observed long ago—Men mark when they hit and fail to notice when they miss.

I am, etc.,

JAMES W. BARRETT.

MELBOURNE,
June 27, 1942

SYMPATHETIC OPHTHALMITIS

To the Editors of THE BRITISH JOURNAL OF OPHTHALMOLOGY.

DEAR SIRS,—This paper was written before the War and was to have been read at a meeting of the Midland Ophthalmological Society. There was no time to read it and it was laid aside and forgotten. I have recently had another case of sympathetic ophthalmitis which must lead to some modification of the views that I have put forward regarding the time the inflammation may follow the removal of the exciting eye.

Mr. T. I., aged 69 years, a feeble, worn-looking man. His doctor writes that in his opinion he is completely worn out, and has been a heavy drinker, a puddler by trade. The cataract which has been under observation for five years shews none of the characteristics of a Ray-cataract. On February 11, 1942, the left lens was extracted at the West Bromwich Hospital by the combined method. The sclera was very hard and the eye rolled over, making it difficult to make the puncture. It was found impossible to express the lens even after the section had been enlarged on each side. An attempt was made to do a vectis extraction, but the lens broke up and was removed piece-meal. The eye reacted violently with injection and corneal oedema. A course of N.A.B. was instituted. A week later the injection was less, and the iris glossy. There was no "K.P." There was much cortex in the anterior chamber. The right eye was absolutely free from any inflammation. March 12, a month after the extraction. Still no "K.P.", considerable injection, no "K.P." Some haemorrhages on the surface of the iris. No pain no tenderness. The eye feels slightly soft. March 20. Definite improvement. Less injection; tension normal; pupil occluded; not tender. Two of my colleagues at the Birmingham Eye Hospital considered that the eye was safe to leave. On April 10, two months after the extraction I decided that whereas the eye would probably never be of any use it was wise to remove it, and this was done at

once. On June 4, two months after the excision the right eye was free from any sign of inflammation. There was a mature cataract. Examination with slit-lamp.

On July 23, four months after the removal of the left eye the patient came to the hospital and said that his eye had been red and painful for a week. It was injected, and the pupil was small. There was some plastic material smeared on the back of the cornea. I gave him an injection of T.A.B. as a preparative to a course of M. and B. The reaction was slight. On August 6 the pupil had fully dilated with atropine, and there were only a few fine thread-like synechiae. There was still some plastic "K.P.," the iris was muddy, and the cornea steamy. August 27. No "K.P.," and only slight injection. He has had a course of N.A.B. and is much better. The M. and B. seemed to have no action on the inflammation. September 11. Some diffuse paste-like "K.P.," slight c.c. injection. November 12. Severe pain, eye hard, and tender. Excision advised.

Here we have an inflammation almost certainly of the sympathetic type following the removal of the exciting eye after an interval of nearly four months. The socket is a good one and there is no trace of any retained uveal tissue. The eye was removed with a long bit of the optic nerve. There is no doubt that three weeks before the onset of the inflammation the eye showed no clinical signs of inflammation.

I am, etc.,

T. HARRISON BUTLER.

BIRMINGHAM,
November 18, 1942.

UNUSUAL CASES OF CONJUNCTIVITIS

To the Editors of THE BRITISH JOURNAL OF OPHTHALMOLOGY.

DEAR SIRS,—According to the wish expressed by Major E. F. King, R.A.M.C., in his article "Four unusual cases of conjunctivitis" (*Brit. Jl. Ophthal.*, Vol. XXVI, p. 467), I beg to inform you that I treated numerous cases similar to those described by the author among soldiers of the Russian Army during the last war.

The cases I am referring to were inflammations and ulcers of conjunctiva of lower fornix brought about artificially by the cauterising proceeding of chemical or thermal agencies, this has been done in order to avoid military service. Such cases were, of course unknown in Britain at the time when military service was voluntary. On the Continent, on the other hand, where military service has been compulsory, we had frequently the opportunity of noting cases

of simulation of blindness and self-inflicted lesions of various organs, and especially of the eyes, the purpose of which actions was to avoid the military service, particularly in war-time.

I myself have seen cases of artificial ulcers of conjunctiva, artificial leucoma, traumatic cataract, chronic coujunctivitis. I have also seen cases of artificial myopia caused by a spasm of accommodation due to the use of strong concave-lensed spectacles for a long period of time or to the use of miotics.

It is conceivable that since the introduction of conscription in Britain cases of individuals trying to avoid military service might have occurred even in this country, in spite of the great patriotism of the people.

In these cases described by Major King, it is the fact that only one eye is affected, the fact of the lower fornix being the locus and scarring that make me suspect the artificial origin of the conjunctivitis.

The process of scarring of conjunctiva and symblepharon may be observed in cases of trachoma, diphtheriac conjunctivitis, pemphigus, as well as after burns. The first three causes have to be discarded, the fourth only remains as a possible explanation. The exacerbation and recidives can easily be explained by assuming that the injuries have been repeatedly inflicted in order to prolong the illness. The enlargement of the pre-auricular gland may occur as a result of a secondary infection of the injured conjunctiva with destroyed epithelium by pyogenic miero-organisms which are usually found in the conjunctival sac—in the cases described by the author, staphylococcus.

I can't, of course, be sure that my suppositions are correct, as I have not seen the cases described by Major King. In any case, if such diseases should occur among soldiers in an epidemic or even endemic form, I should advise to try and treat such cases by introducing a neutral ointment into the conjunctival sac and by isolating the eye and protecting it from further injuries by means of a tightly adhering band of the kind of those which are used in cases of gonorrhoeic conjunctivitis to protect against infection the eye which is not affected, *e.g.* Buller's shield. I have observed in cases which had been treated without result for several months, that the symptoms disappeared in a few days after the above described treatment has been applied.

Yours faithfully,

DR. J. RUSZKOWSKI,
Lecturer of Ophthalmology of Polish Medical School, Edinburgh.

38, MARCHMONT CRESCENT,
EDINBURGH. *October* 20, 1942.

NOTES

Death

AS we go to press we learn with great regret of the sudden death on July 26, of Dr. C. E. Ferree, of Baltimore, aged 65. Both Dr. Ferree and his wife were very well known for their work in the ophthalmic laboratory and on the physical and physiological side. Papers of theirs have appeared at regular annual intervals in our Journal for some time, and one on Black-out in the Home is even now waiting publication. We hope to give a short memoir of Dr. Ferree in a later number.

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Pan-American Congress of Ophthalmology

THE second meeting of the Pan-American Congress of Ophthalmology has been called for November 4 to 7, 1943, in Montevideo, Uruguay. The programme of the meeting includes one full day for social ophthalmology, comprising prevention of blindness and trachoma, one day for papers on research work in ophthalmology, one day for clinical ophthalmology and one day for surgical ophthalmology. Fifteen minutes are allotted for the presentation of each paper, and manuscripts should reach the executive secretaries Dr. Conrad Berens, 477, First Avenue, New York, U.S.A., or Dr. Moacyr E. Alvaro, Consolação 1151, São Paulo, Brazil, before June, 1943.

It has been decided to extend a cordial invitation to all ophthalmologists of the British Empire to attend the Congress in Montevideo as guest members.

* * * *

Royal Society of Medicine

THE meetings of the Section of Ophthalmology during the session 1942-43 will be held as follows:—

Friday, March 12, at 2.30 p.m.

Friday, April 30, at 5.0 p.m.

Friday, June 11, at 5.0 p.m.

Cases and specimens will be shown half-an-hour before the advertised times of the meetings.

* * * *

North of England Ophthalmological Society

THE North of England Ophthalmological Society will, conditions permitting, run the following meetings during the coming Session: Saturday, December 12, 1942, at Leeds; Saturday, March 6, 1943,

at Liverpool; Saturday, April 3, 1943, at Sheffield. The meetings will be held at 11 o'clock in the morning.

* * * *

Caveat faber

LET the artificer be on his guard. This is the burden of much of the publications of the Society for the Prevention of Blindness in these times, and the same warning is certainly applicable to the workmen and workwomen of Great Britain. In America the number of machines and operators has increased enormously and the average frequency of injury to the eye has not been very much reduced in consequence. The committee on Industrial Ophthalmology published a report in the Journal of the American Medical Association of February 21, 1942, and urged the necessity for standards of the various essential qualities of vision necessary for a "large variety of specific occupations" so that employees may be set in the kind of work "consistent with the degree and quality of their vision." These essential qualities comprise visual acuity (far and near); muscle balance (far and near); accommodation and convergence; perception of depth and stereoscopic vision, and lastly colour vision. Such a scheme "will involve a study of occupations and the classification of jobs in broad groups. A new method of vision testing by non-medical persons will have to be developed, as employees, en masse do not and cannot avail themselves of the opportunity of visiting ophthalmologists."

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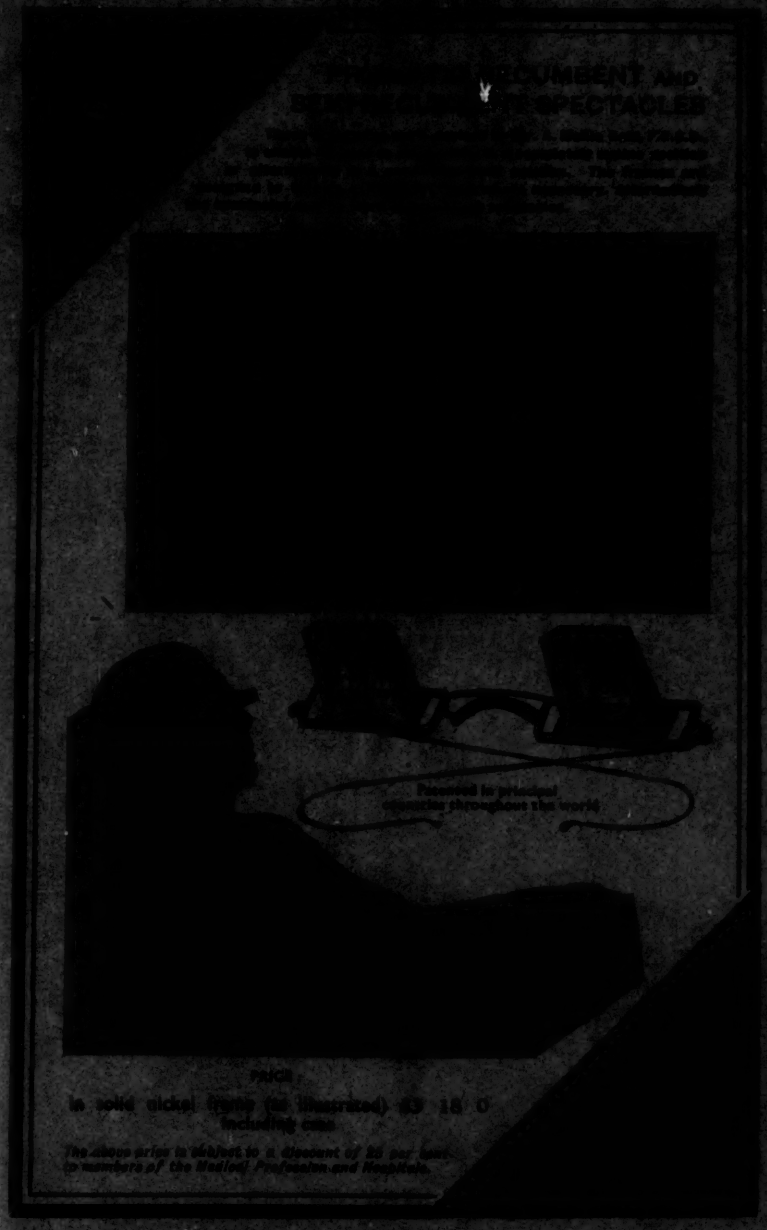

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